



REMARKS

1. Summary of the Office Action

In the Office Action mailed April 7, 2006, under 35 U.S.C. § 103(a), the Examiner rejected claims 1, 7, 9, 12, 16, 17, 23, and 30 as being obvious over a combination of U.S. Patent No. 7,003,261 (Dietz) and U.S. Patent No. 6,782,277 (Chen), claims 18 and 19 as being obvious over a combination of Dietz, Chen, and U.S. Patent Application Publication No. 2004/0146013 (Song), and claims 10 and 20 as being obvious over a combination of Dietz, Chen, and U.S. Patent No. 5,907,794 (Lehmusto). Further, and similarly under 35 U.S.C. § 103(a), the Examiner rejected claims 11, 14, 15, and 24 as being obvious over a combination of Dietz, Chen, and U.S. Patent Application Publication No. 2003/0162550 (Kuwahara), claims 26 and 31 as being obvious over a combination of Dietz, Chen, and U.S. Patent No. 5,534,872 (Kita), and claims 21 and 22 as being obvious over a combination of Dietz, Chen, Lehmusto, and Kuwahara. Also under 35 U.S.C. § 103(a), the Examiner rejected claim 27 as being obvious over a combination of Dietz, Chen, Kita, and U.S. Patent No. 6,799,024 (Wang), and claims 28 and 29 as being obvious over a combination of Dietz, Chen, Kita, Wang, and U.S. Patent No. 6,567,460 (Tak).

2. Status of the Claims

Claims 1, 7, 9-12, 14-24, and 26-31 are pending in this application. Of these, claims 1, 7, 16, and 23 are independent, and the rest are dependent.

Each of claims 1, 7, 9-12, 14-24, and 26-31 includes the functions of dynamically directing a wireless repeater to receive wireless signals from a plurality of base stations. Specifically, claims 1, 7, 9-12, 14, 15, 23, 24, and 26-31 includes the function of “causing an antenna of a wireless repeater to sweep over a coverage area through increments, and to thereby

receive wireless signals from a plurality of base stations.” Claims 16-22 include a similar function of “incrementally adjusting the wireless repeater to receive wireless signals within the number of coverage areas, and to thereby receive wireless signals from a plurality of base stations.”

3. Response to Rejections

a. Dietz Reference

Dietz discloses a method of installing repeater units into cars to increase the likelihood that a wireless transmission path is established between a remotely located mobile station and a base station. According to Dietz, when a wireless connection cannot be made between a mobile station and a base station directly, a connection is made through a sequential set of repeaters within cars traveling in remote regions. Further, if an alternate path of a sequential set of repeaters is available, and if that alternate path has more preferable transmission attributes, then that path is selected.

b. Chen Reference

Chen discloses a method of wireless communications wherein a base station transmits a signal to a subscriber station through a signal beam that sweeps through the coverage area of the base station. (Chen Abstract).

According to Chen, forward-link and reverse-link communications between a beam sweeping base station and its serviced subscriber station are coordinated. As a base station’s signal beam sweeps through the base station’s coverage area, the signal beam passes through a portion of the coverage area containing different active subscriber stations. Transmission of user data from the base station is delayed such that the data is transmitted while its destination or source subscriber station is within the base station’s signal beam. (Col. 4, lines 34-42). As a

signal beam continually sweeps, the base station predicts when the signal beam angle will be optimal for efficiently transmitting forward-link supplemental channel traffic to each subscriber station. According to this prediction, the base station buffers user data addressed to a given subscriber station until a signal beam reaches the signal beam angle that is optimal for transmitting to that subscriber station (Col. 6, lines 28-41).

Conversely, on the reverse-link, a serviced subscriber station buffers its reverse-link data rate such that the user data is transmitted during periods when the serving base stations can most efficiently receive the subscriber station's reverse-link signal. For a given beam sweeping base station, these periods generally coincide to periods when the beam sweeping station is receiving along a signal beam pointed toward the subscriber station. (Col. 16 line 59 – Col. 17 line 16; Col. 18 lines 10-15).

In addition to coordinating communications, Chen also discloses a rotating narrow-beam directional antenna that is controlled and coordinated by a base station controller (BSC). For instance, a BSC connected to a beam sweeping base station coordinates sweeping speed patterns of the transmitting base station's signal beam. In operation, a motor driving the directional antenna facilitates correlating signal beam angles with transmitted power levels by providing signal beam angle information to a control processor. After receiving appropriate commands from the BSC, the control processor would then accelerate or decelerate the speed of the motor as necessary to accommodate user data traffic loading to and from the serviced subscriber stations.¹ (Col. 8, lines 47 – 60; Col. 13 line 65 – Col. 14 line 4; Col. 13 lines 9-13).

As another example, the BSC coordinates the width and shape of the signal beams transmitted from the beam sweeping base station. In operation, a base station sends information

¹ However, note that the beam sweeping controller may operate independently of controller processor, and may sweep at a generally constant speed. Col. 13, lines 14-18.

pertaining to each subscriber station to the BSC. Such information may comprise, for example, power control, signal beam angle, and signal beam shape information. The BSC uses this information to determine optimal beam shapes, and the BSC then sends commands to the base station to vary the shape of the base station's signal beam accordingly. Col. 9, lines 14-20.

**c. Response to § 103 Rejection of
Independent Claims 1, 7, and 23**

The Examiner rejected claims 1, 7, 9, 12, 23, and 30 under 35 U.S.C. § 103(a) as being obvious over a combination of Dietz and Chen. Of these, claims 1, 7, and 23 are independent.

Under M.P.E.P. § 2143, in order to establish a *prima facie* case of obviousness of a claim over a combination of references, the Examiner must establish that the combination discloses or suggests every element recited in the claim, and the Examiner must show that it would have been obvious to a person of ordinary skill in the art to have combined the references in the manner suggested by the Examiner. Applicant respectfully traverses the obviousness rejection of claims 1, 7, and 23 because the combination of Dietz and Chen, at a minimum, fails to disclose or suggest “causing *an antenna of the wireless repeater* to sweep over a coverage area through increments . . .” (Emphasis added). Further, a person of ordinary skill in the art would not have combined the references in the manner suggested by the Examiner, because doing so would render Dietz effectively inoperable.

The combination of Dietz and Chen fails to teach or disclose “causing *an antenna of the wireless repeater* to sweep over a coverage area through increments . . .” (Emphasis added). In setting forth the obviousness rejection, the Examiner admitted that “Dietz fails to disclose wherein the antenna sweeps over a coverage area through increments and receiving wireless signals at increments.” (Office Action, p. 3). Applicant agrees with the Examiner’s admission, and further notes that Dietz fails to disclose a *wireless antenna* repeater that sweeps over a

coverage area through increments. Further, Applicant respectfully asserts that Chen fails to make up for this deficiency in Dietz. Specifically, Chen fails to disclose or suggest an antenna of a wireless repeater sweeping over a coverage area through increments.

Rather than an antenna in a wireless repeater, the directional antenna disclosed by Chen is a base station antenna, and it operates in conjunction with commands sent from a BSC. As noted above, the BSC sends commands to control the sweeping speed of the directional antenna,¹ to vary the signal beam angle and shape emitted from the base station's signal beam, and to regulate traffic data sent to the subscriber station (e.g., user data is buffered until the signal beam is pointed to the given subscriber station). (Col. 9, lines 14-20). As such, the antenna disclosed in Chen is not an antenna within a wireless repeater, but rather a directional antenna in a base station that operates in conjunction with commands from a BSC. Therefore, the combination of Dietz and Chen fails to disclose "causing *an antenna of the wireless repeater* to sweep over a coverage area through increments . . ." (Emphasis added).

Further, a person of ordinary skill in the art would not have combined the references in the manner suggested by the Examiner, because doing so would render Dietz effectively inoperable. According to Chen, only the beam sweeping base station, and not the subscriber station, contains the rotating narrow-beam directional antenna. As such, communication between the base station and the subscriber station is premised on only the base station containing the rotating directional antenna. Hence, for a beam sweeping base station and a serviced subscriber station to successfully communicate, the beam sweeping base station transmits when the base station's signal beam is pointed toward the subscriber station. (Col. 6, lines 28-41). Conversely, the serviced subscriber station delays its respective transmit signal

until the signal beam of the servicing beam sweeping station is pointed toward the subscriber station. (Col. 16 line 59 – Col. 17 line 16; Col. 18 lines 10-15). Chen does not disclose a beam sweeping base station and a given subscriber station both being equipped with rotating narrow-beam directional antennas.

However, combining Dietz and Chen in the manner suggested by the Examiner would require each repeater unit of Dietz to be installed with a rotating narrow-beam directional antenna. But, doing so would render Dietz effectively inoperable.

As noted above, Dietz teaches a method of increasing the likelihood that a wireless transmission path is established between a mobile station and a base station via a sequential set of repeaters installed within cars. Taking the scenario where first and second repeater units within a transmission path are both equipped with rotating directional antennas, communication would occur *only* when both of their respective signal beams are pointed toward each other *at the same time*. For example, the first repeater unit would delay transmission of its signal until not only its signal beam is pointed toward the second repeater unit, but also until the signal beam of the second repeater unit is also pointed toward the first repeater unit *at the same time*. In this scenario, it is likely that the rotating antennas of both the first and second repeater units would never point toward each other at the same to allow for transmission, or would occur so infrequently that effectively no transmission would occur.

As such, combining Dietz and Chen in the manner suggested by the Examiner would render Dietz effectively inoperable. Therefore, a person of ordinary skill in the art would not have combined Dietz and Chen in the manner suggested by the Examiner.

¹ Although the control processor of the beam sweeping station may receive beam sweep speed commands from a BSC through a backhaul, it should be noted that the beam sweeping controller may sweep the receive beam at a constant speed independent of commands from the control processor.

Given that the combination of Dietz and Chen fails to disclose or suggest the elements of any of claims 1, 7, and 23, and given that a person of ordinary skill in the art would not have combined the references in the manner suggested by the Examiner, a *prima facie* case of obviousness of these claims over Dietz and Chen does not exist. Therefore, Applicant submits that claims 1, 7, and 23 are allowable.

d. Response to § 103 Rejection of Independent Claim 16

Additionally, the Examiner rejected independent claim 16 under 35 U.S.C. § 103(a) as being obvious over a combination of Dietz and Chen as well. Further, the Examiner set forth the same argument for combining Dietz and Chen for claim 16, as the Examiner set forth for claims 1, 7, and 23. Applicant respectfully traverses the obviousness rejection of claim 16, because a person of ordinary skill in the art would not have combined the references in the manner suggested by the Examiner. Further, the combination of Dietz and Chen fails to disclose or suggest every element recited in claim 16. Specifically, the combination of Dietz and Chen fail to disclose “incrementally adjusting the wireless repeater to receive wireless signals within the number of coverage areas . . .”

A person of ordinary skill in the art would not have combined the references in the manner suggested by the Examiner. For the reasons set forth above, doing so would render Dietz effectively inoperable.

Moreover, even if Dietz and Chen were to be combined in the manner suggested by the Examiner, the combination fails to disclose or suggest every element recited in claim 16. Specifically, combination of Dietz and Chen fail to disclose “incrementally adjusting the wireless repeater to receive wireless signals within the number of coverage areas . . .”

Dietz discloses a method of installing repeater units into cars to increase the likelihood that a wireless transmission path is established between a remotely located mobile station and a base station. However, Dietz fails to disclose “incrementally adjusting the wireless repeater to receive wireless signals within the number of coverage areas” Further, Chen fails to make up for this deficiency in Dietz. As noted above, Chen discloses a base station that transmits a signal through a signal beam that sweeps through the coverage area of the base station. As Chen is focused on a base station signal beam that sweeps through its coverage area, it fails to disclose or suggest “incrementally adjusting the wireless repeater to receive wireless signals within the number of coverage areas”

Given that a person of ordinary skill in the art would not have combined the references in the manner suggested by the Examiner, and given that the combination of Dietz and Chen fails to disclose or suggest every element of claim 6, a *prima facie* case of obviousness of claim 6 over Dietz and Chen does not exist. Therefore, Applicant submits that claim 6 is allowable.

**e. Response to § 103 Rejection of
Dependent Claims 9-12, 14, 15, 17-22, 24, and 26-31**

Without addressing the Examiner’s statements regarding the pending dependent claims 9-12, 14, 15, 17-22, 24, and 26-31, which are not conceded, Applicant points out that these claims all depend from and incorporate the limitations of one or more of independent claims 1, 7, 16, and 23, which, as discussed above, are allowable over the cited art. Accordingly, 9-12, 14, 15, 17-22, 24, and 26-31 are allowable for at least the reason that they each depend from an allowable claim. Applicant respectfully requests that the Examiner withdraw the rejections of the pending dependent claims.

4. Conclusion

For the foregoing reasons, Applicant submits that all of the pending claims are now in condition for allowance. Therefore, Applicant respectfully requests favorable reconsideration and allowance.

Should the Examiner wish to discuss any aspect of this case, the Examiner is invited to call the undersigned at (312) 913-2141.

Respectfully submitted,

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